

Amendments to the Drawings

Figure 13 has been voluntarily amended, in compliance with 37 CFR § 1.121(d), merely to correct a drafting error. A marked-up copy of the original and a replacement drawing sheet for sheet 7/9 is attached. No new matter has been introduced by the amendment to the drawing.

Remarks

In the Office Action mailed on July 7, 2005, the Examiner states, on page 2, paragraph 3, "Claims 11 - 14, 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Harver et al. (U.S. Patent No. 5,512,785)."

Rejections under 35 U.S.C. § 102(b)

In order to anticipate a claim, a reference must teach all the elements of a claim. See Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631 (Fed. Cir. 1987). In addition, the reference must show the claimed invention "in as complete detail as is contained in the patent claim" in order to anticipate the claimed invention. Richardson v. Suzuki Motor Co., Ltd., 868 F.2d 1226, 1236 (Fed. Cir. 1989). Applicant contends that the cited references do not teach all the elements of the claim and therefore these claims are not anticipated.

Regarding claim 11: On page 2, paragraph 5, the Examiner refers to Harver et al. as teaching, "Forming a slot region (18) for a doped polycrystalline semiconductor plug material (28) within an outer periphery of an etched window region... (see figure 6, col. 3, lines 12-43)." Applicant respectfully traverses. Applicant's claimed invention recites a "semiconductor plug material within an outer periphery." Subsequently in claim 11, Applicant refers to the "polycrystalline semiconductor plug," indicating that there is one contiguous plug, which, "During the anneal cycle, the dopant from a lower edge of the polycrystalline silicon plug is driven into the substrate, forming a toroidal-like junction..." (Applicant's specification, page 5, lines 31-35). The Toroidal-like junction is defined in the specification: "The toroidal-like junction, in three-dimensions, is similar to a toroid shape but radial symmetry is not necessary. For example, a toroid is a surface generated by a plane-closed

curve rotated about a line that lies in the same plane as the curve but does not intersect it." (Applicant's specification, page 5, line 34 - page 6, line 6).

In contrast, Harver et al. neither teaches nor suggests a "semiconductor plug" as found in Applicant's claim 11. Harver et al. teaches a semiconductor material with (at least) two sidewalls; nothing in the patent teaches or suggests that these sidewalls are contiguous. In column 2, line 32, the Harver et al. patent provides that, "Spacers...are formed..." The spacers are used to define the plug regions (Harver et al. figure 5). Harver et al. subsequently teaches, in column 3, line 11, "base contact *plugs*" (emphasis added), teaching that there are at least two plugs, which are thereafter referred to throughout the patent. The referenced patent does not teach the shape of the window region, nor does it teach or suggest a semiconductor plug. The references to "base contact plugs," when viewed in light of the Harver et al. drawings 6-10, suggest one plug on each of two sidewalls. As the Harver patent neither teaches nor suggests Applicant's "semiconductor plug material within an outer periphery," or Applicant's single, contiguous "polycrystalline semiconductor plug," it fails to teach each and every element of Applicant's claimed invention. As such, Harver et al. cannot anticipate claim 11 of Applicant's claimed invention. For at least the foregoing reason, Applicant requests that the 35 U.S.C. § 102(b) rejection of claim 11 be withdrawn.

Regarding claim 12: The Examiner states, on page 3, paragraph 5, "...the redistributing results in a doping concentration toroidal-like in topology." Applicant again traverses. "Toroid" is defined in the specification as "a surface generated by a plane-closed curve rotated about a line that lies in the same plane as the curve but does not intersect it." (Applicant's specification, page 6, lines 1-4) As the present invention may be used to fabricate a plug that

is not round, the term "toroidal-like" was selected to allow for a non-circular periphery while still incorporating the characteristic of a curved two dimensional shape prescribed about a radius or perimeter. As Harver et al. teaches a device with at least two plugs, a toroidal-like topology would be contrary to Harver et al.'s invention. Further, as claim 12 depends directly from now distinguished and novel claim 11, the Harver et al. patent has been shown not to read on the element of a "semiconductor plug material within an outer periphery" of Applicant's claim 11. For at least the foregoing reasons, Applicant requests that the 35 U.S.C. § 102(b) rejection of claim 12 be withdrawn.

Regarding claims 13, 14, and 17: as claims 13, 14, and 17 depend directly from now distinguished, novel claim 11, Applicant requests that the 35 U.S.C. § 102(b) rejections of claims 13, 14, and 17 be withdrawn.

On page 4, paragraph 2, the Examiner states, "Claims 15 - 16, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harver et al.... in view of Zdebel et al."

Rejections Under 35 U.S.C. § 103(a)

In order to make a prima facie showing of obviousness, several criteria must be met. See MPEP §2143. These criteria include: 1) some suggestion in the prior art to modify or combine teachings, and 2) the prior art references, alone or in combination, must teach or suggest all the limitations of the claim. See id. Applicant will show that none of the references, alone or in combination, teach or suggest all the limitations of Applicants' claims.

Zdebel et al. teaches "A method of fabricating a semiconductor structure having self-aligned diffused junctions..." As with the Harver et al. patent, Zdebel et al. teaches "sidewalls" and "nitride spacers," but fails to teach "forming a slot region for a doped polycrystalline semiconductor plug material within an outer periphery of an

etched window region..." (Applicant's claim 11) which is essential in forming a "doping concentration toroidal-like in topology." (Applicant's specification, page 6, line 25-27)

As claims 15, 16, and 18 all depend directly from claim 11, which has been shown to possess a limitation that is neither taught, suggested, nor motivated by Harver et al., and which is also not taught, or suggested, by Zdebel et al., they cannot obviate Applicant's claimed invention. As Applicant has shown that none of the references, alone or in combination, teach or suggest all the limitations of Applicant's claims, Applicant requests that the 35 U.S.C. § 103(a) rejections of claims 15, 16, and 18 be withdrawn.

Summary

The specification has been amended to correct a typographical error. The specification now correctly reflects that there is only one oxide spacer element with the element number 1301.

Claim 11 has been distinguished from the prior art in that the references to an "outer perimeter" and "circumscribed" regions as well as "toroidal-like" dopant distribution indicate a continuous plug, wherein the prior art refers to "plugs," which suggest discontinuous regions. When read in light of the referenced drawings, the only reasonable conclusion is that there are at least two plugs, arranged on the device sidewalls.

As claims 12 - 18 depend from now distinguished claim 11, none of the referenced patents, either alone or in combination, teach every element of Applicant's claimed invention.

In light of the arguments presented *supra*, Applicant asserts that the claimed invention has been distinguished from the prior art and is now in condition for allowance. Applicants therefore request that the original claims be allowed.

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Signed: Sally Azevedo
Typed Name: Sally Azevedo

Date: October 7, 2005

Respectfully submitted,


Bradley W. Scheer

Reg. No. 47,059

P.O. Box 2-E

San Jose, CA 95109-0005

(408) 297-9733

ATM-273



ANNOTATED MARKED-UP DRAWING

7/9

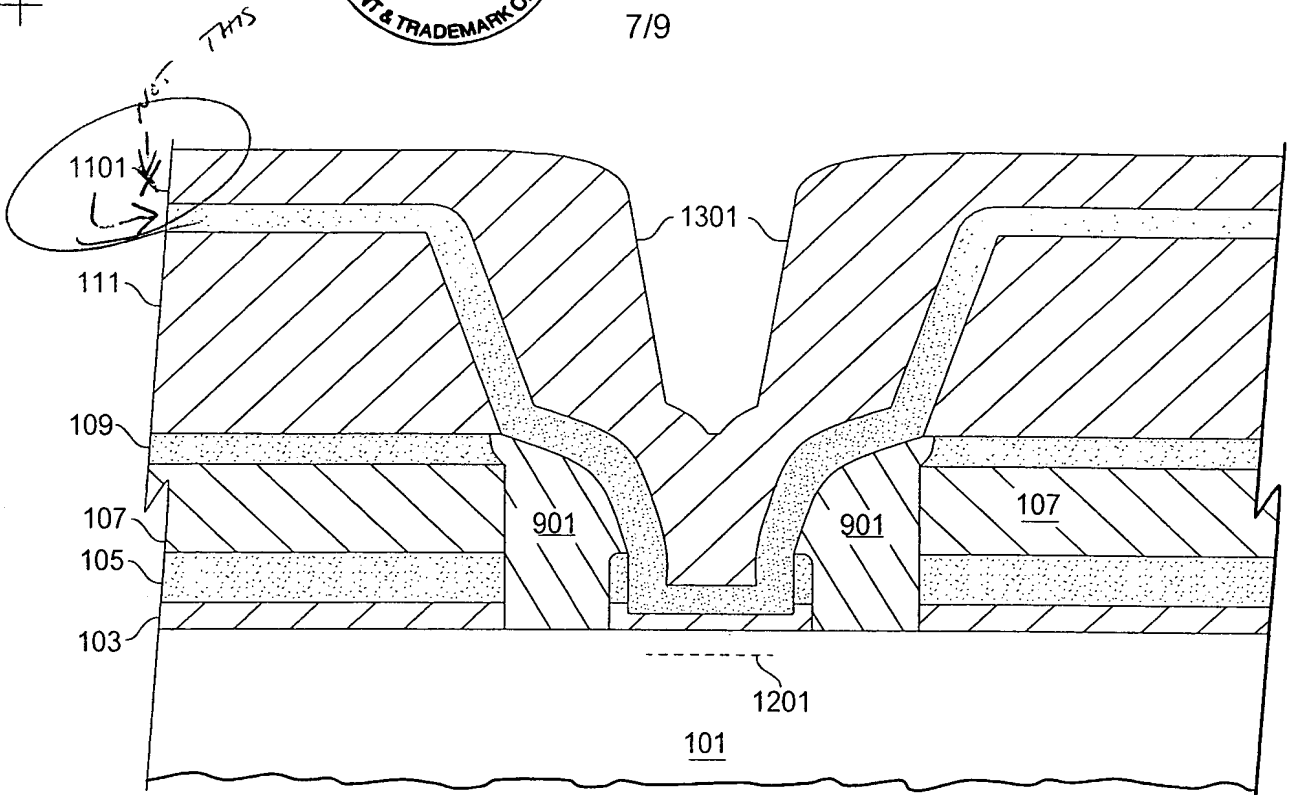


Fig. 13

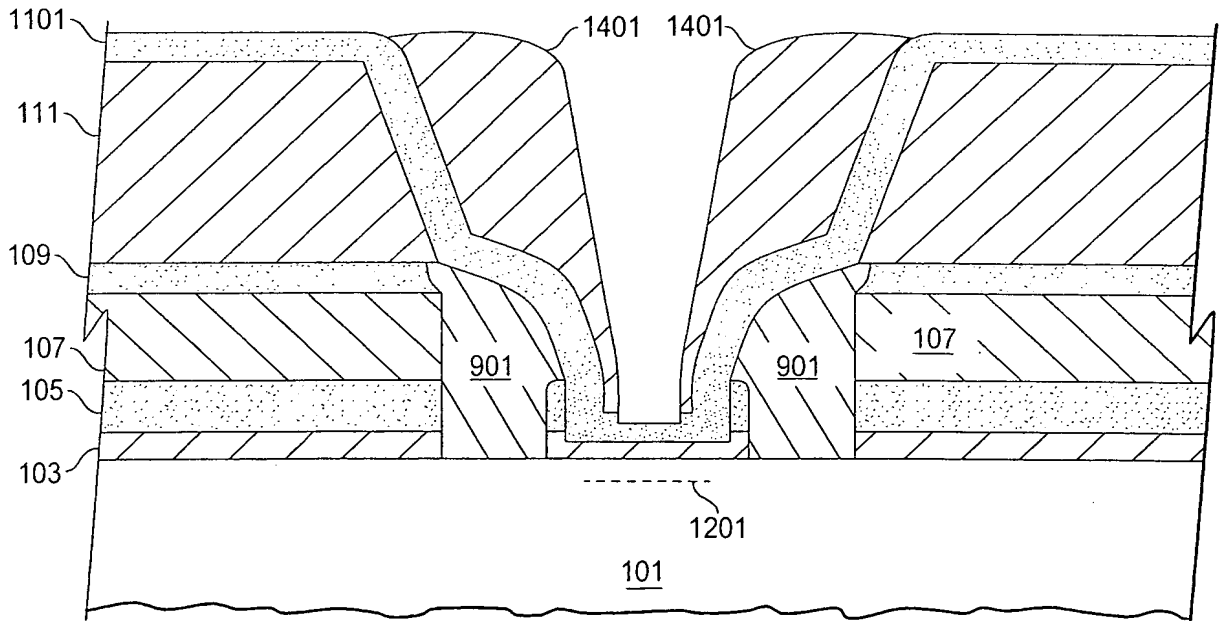


Fig. 14

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